WHY FLOWERS ARE OF DIFFERENT COLORS---FEBRUARY WORK

Gardeners often wonder why it is that seeds of the same plants, asters, for illustration, always produce the same colors when sown in the earth. Why is it that seeds of white asters do not sometimes make the mistake of producing blue or pink flowers or scarlet phlox produce white flowering plants? How is it that these plants draw from the earth just the right materials to produce flowers of the right color?

It is not altogether what the plants draw from the earth that makes the flowers and foliage take on certain distinct colors.

At this season of the year, when hyacinths in pots have been stored in dark cellars to form roots, after which the leaves appear and soon the flower bud, as a signal that it is time for the pot to be placed in a warmer temperature and direct sunlight, it will be noticed, if care is taken to closely inspect the plants as soon as they are removed from the dark cellar, that the young foliage lacks color and the flower buds of the white, blue and pink varieties are all of the same color, somewhat green, but nearly white, and the florist from whom the bulbs were purchased is suspected of having made a mistake, furnishing all one color of flowering bulbs instead of the red, white and blue that were ordered.

When the plants are placed in the sunlight the leaves drink in the sunlight, so to speak, and the flower buds begin to assume their proper colors and the window gardener forgets to commend the careful florist that a day or two before had been condemned.

It is sunlight that chiefly causes the difference in the color of the foliage and flowers of plants, but this is not the sole cause. The foliage and flowers of plants absorb sun rays of certain colors and reject others, and this it is that makes the flowers take on their proper colors.

We know that the character of the soil and possibly a difference in climate may cause flowers to change their colors. **Some wild flowers of New Jersey are of quite a different shade of color from the same flowers in Illinois, the character of the soil causing the flowers to change their selection of the sun's rays, and thus the color of the flower is changed.**

To prove that the character of the soil may change the color of flowers take any of the pink flowering varieties of hydrangea hortensis, repot the plant, carefully washing away the old soil and replace in soil in which alum has been incorporated; the proper proportion is half a pound of alum, broken into pieces the size of a hickory nut, to each bushel of soil. In this soil the plants, instead of producing pink flowers as formerly, will produce flowers of blue.

New shades of flowers are produced by crossing one color with another, somewhat as an artist mixes paints to obtain desired shades and colors, but with far more trouble and far less accuracy. Sometimes on the same stem flowers of different colors are found, due to hybridization or to a freak of nature, the tendency to break away from the established type. In nature nothing stands still, it is either progression or retrogression.

The range of color for each species seems to be confined within certain limits, though the hybridizer is gradually extending these limits. Yellow, white and purple are the commonest colors in wild flowers in the order named. Yellow is the simplest and most primitive color, and blue the latest and most highly evolved.

Insects can distinguish colors, have their favorites and are attracted by the colors of flowers. It seems doubtful, possibly, but is easily proved. Take a few panes of window glass, drop a little syrup on the centre of each pane and under each lay a piece of colored cloth, a different color under each pane, white, red, blue, yellow and black under another. Place the glasses where insects can reach them and it will be noticed that a decided preference will be shown for some. The experiment can be repeated and the result will be the same, so it is not simply a matter of chance.

The color preference of insects probably has had its effect in the hybridizing of wild flowers.

Hybridization is fully explained in every botany, where complete information on this subject will be found.

EDWARD C. VICK.

GARDEN WORK FOR FEBRUARY.

The mild weather of Feburary and March is a good time to finish pruning. Cutting away part of a branch confines future growth to the remaining buds, improving the vigor of the growth. Judgment must be exercised in this operation and no general rule can be laid down, as different plants require different treatment.

CUTTING BACK TREES AND SHRUBS.

Cutting back the ends of the branches of trees and shrubs makes them bushy. Alders, Camperdown elms and some others require annual treatment to keep them compact, when this is desired.

Cut leaved and silver maples, weeping lindens and other tall, rapid growing trees should be headed in several times while young to cause them to grow bushy and the limbs will grow stronger.

Trees in streets and surrounding houses should have high heads to allow a good view, free circulation of air and free head room for people under the limbs. The lower branches of these trees should be thinned out when they are small, but otherwise should rarely be cut back.

SAWING LARGE BRANCHES.

When cutting off large branches, which is sometimes necessary, the cut should be made close to the trunk. Do not begin sawing on top of a large branch, as when about half severed the weight of the branch will cause it to fall, stripping down a large piece from the trunk, greatly damaging the tree. Make the first cut under the limb about ten inches out from the trunk, sawing half way through. Then start the cut from the top of the limb, over the first cut or a little nearer to the tree trunk. After the limb has fallen make a new cut close to the trunk.

After the final cut is made paint the surface, covering it thoroughly with a good lead paint or hot tar. This helps new growth to cover the wound.

PRUNING SHRUBS.

Shrubs are kept in good bushy form by pruning, whereas otherwise they have a tendency to become straggly. There are two classes of shrubs, one producing flowers from the buds that were formed the previous season, another class from flower buds on the new wood of the current season.

Azaleas, andromedas, dwarf almond, daphne, flowering crab, deutzias, dogwoods, calycanthus, cornelian cherry, flowering current, golden bell, honeysuckles, dwarf horse chestnut, hydrangea otaksa, leatherwood, lilacs, kalmias, snowy mespitus, mock oranges, privets, viburnums, rhododendrons, &c., flower on wood of the previous season, so that pruning before the flowering season results in decreasing the supply of flowers. If the last year's growth is strong and vigorous the branches may be shortened somewhat, leaving sufficient buds for a good showing of flowers. Summer pruning is the method by which these shrubs are controlled. This is done by shortening the old wood just after the plants have finished flowering, cutting out any branches that spoil the shape of the shrub. **This encourages a vigorous growth of new wood on which flowers will be produced the following season. Throughout the growing season too rank shoots are pinched back to regulate the shape of the plant.**

Where the shrubs are to be kept back in size once every three or four years they are headed in to the desired size, providing the summer pruning has not accomplished this.

Amorpha, altheas or rose of sharon, burning bush, coronillas, genistas, hypericums, hydrangeas, flowering locusts, spireas, &c., produce flowers on wood of the current season's growth, so these may be closely pruned without danger of decreasing the number of flowers. In fact, most of these will flower more freely if pruned severely.

PRUNING HEDGES.

Evergreen hedges should not be pruned until April, but deciduous hedges may be pruned at this time.

PREPARE FOR SPRING.

This is a good time to get vases, porch boxes and trellises in good order. Labels, stakes and plant boxes should be provided for spring and summer use.

MAKE CUTTINGS.

Plants seem to know that spring is approaching. Those fortunate enough to have potatoes in the cellar, while the conditions are the same as they have been all winter, will notice that the sprouts are starting in the effort to be ready on time for planting. Plants indoors take a fresh start and begin to put out new growth. Abutilons, fuchsias and geraniums sprouting vigorously may be propagated as soon as the sprouts are large enough to supply cuttings.

SOW ANNUALS.

Annuals wanted for early summer flowering, cannas, centaureas, cobaea scandens, petunias, verbenas, &c., may be sown now in shallow boxes and transplanted as soon as the seedlings are large enough to handle.

STARTING DAHLIA PLANTS.

Dahlia tubers can be placed in boxes or pots and covered with sand, keeping it damp. Young shoots will start quickly and these can be propagated by cuttings, finally setting out the parent tuber. Moral: Secure dahlia tubers early and have a good big dahlia bed at trifling expense.

FERTILIZE LAWNS.

Lawns can be given a dressing of bone meal at this season with good results that will be observed later.

ANSWERS TO INQUIRIES.

F. D. MacC., Long Island—It is not advisable to start rose plants growing in the house before planting them in the garden. The best plan is to set dormant plants out in the open ground when they are purchased, as soon as the ground is ready in the spring. Plants that have been growing in pots in a greenhouse and on which there is foliage should be planted later than dormant plants. If set out too early the cold will check their growth and likely injure or kill them.

Killarney, Druschki, Lady Hillingdon, J. L. Mock and Gruss an Tepitz are all hybrid tea roses. The only protection these roses are given in northern New Jersey is drawing up a mound of soil eight to ten inches high about the base of the plants late in the autumn. **When the ground begins to freeze the beds are covered with strawy manure and cornstalks and the plants winter safely. On Long Island this same treatment will be all that is required. The uncovered tops may be tied up with straw or burlap, but the use of leaves is not advised as mice are likely to make their nests there and destroy the plants through the winter. The protection should be removed gradually as soon as danger of hard freezing is over.**

Horace, Connecticut—For your beds the following plants can be used with good effect. All are free flowering. The arrangement can be changed to suit your individual taste.

Antirrhinum, new large flowering strain, flowering from July until frost, 2 to 3 feet high. The semi-tall varieties average 15 inches high, the semi-dwarfs 12 inches and the dwarfs 8 inches. The tall varieties can be used alone for beds or planted in the centre of the beds with the lower growing sorts toward the outside edges, giving a pyramid effect.

Amaranthus is a brilliant foliage annual, from 3 to 5 feet high, excellent for bedding.

Bedding petunias, such as Snowstorm and Purple Queen, will average a foot high. Dwarf fringed petunias about 8 inches. The taller varieties form spreading, bushy plants 16 to 18 inches high.

Salvia Elizabeth Dunbar, white, is new and will make an unusual bed the coming season, the plants are about 30 inches high, with long clusters of white flowers.

Arctotis grandis forms much branched bushes two to three feet high, with large showy flowers, white on the upper surface and pale lilac blue on the back. Comes into bloom in July and continues to flower until frost.

Dimorphotheca aurantiaca is a bushy plant from twelve to fifteen inches high. The daisylike flowers are two inches and a half in diameter, are orange gold, with dark disk and halo. The hybrids are similar in habit, but the color of the flowers shades from white through shades of yellow to salmon. Flowering season is from summer on to frost.

Annual gaillardias grow eighteen inches high, flowering profusely from early summer until frost, and are excellent for bedding, though not very generally used. The flowers of the different varieties are of various colors.

Sanvitalia is a dwarf annual, useful for massing in beds or for borders. The double yellow flowers are in bloom all summer.

Lobelia is desirable for edgings; in bloom from June to November. The colors are various shades of blue and white.

If expense is not a consideration a show bed can be made of Hydrangea hortensis in good rich garden soil if the plants are liberally supplied with water.

From this list an inexpensive bed of plants not commonly used can be made, as you object to cannas, geraniums, coleus, &c. The only thing to consider in planting is the height of the plants, keeping the taller growing kinds in the centre of the beds and the low growing plants toward the outer edges of the beds, according to the heights.

S. K., Milford, Pa.—Your inquiry regarding ranunculus was referred to Herman Steinhoff of West Hoboken, N. J., who has had considerable experience in that line.

We have grown ranunculus in the open ground, protecting them with a heavy covering of leaves over winter, and were successful. We have a large lot out now and also have them growing in pots and have never had any trouble. It may be that you keep the soil too wet.

Mr. Steinhoff says he has had no trouble with them. The tubers should be carefully lifted after the foliage has ripened off around the last of August and the tubers stored in some cool place where they will not freeze until the following spring. Plant after frost has left the ground in the spring two inches deep and six inches apart, with sandy soil on top. Plenty of moisture is required at the roots during growing season, and if shaded from sun when in flower the blossoming period will be lengthened.

For greenhouse flowering plant the bulbs in pans of a light soil toward the end of January and keep in a cool greenhouse, and they will flower about the middle of April.

Turban varieties are best, as they are stronger and larger than the Persian. Bulbs are preferred to seeds.

Our method has been to plant in the **open ground in the fall and give them a heavy covering of leaves about a foot deep. The leaves are held in place by a covering of poultry netting.** In the spring the leaves are gradually removed, the final covering being taken off after danger of freezing has passed, and excellent results have been secured by this method.

It may be that your bulbs were infected or had been subjected to a high temperature in shipping from where they were originally grown.

Under the heading of "Uncommon Vegetables" it is amusing to an American to read in a British horticultural journal that "maize or Indian sugar corn is steadily increasing in favor, the green cobs being found to be a great delicacy if boiled and served with a layer of butter and a sprinkling of pepper and salt. The cob is held between the fingers and the grain bitten off."

England does not have the hot summers that we have in the United States. The directions for cultivation are therefore as follows: "Sow the seeds in pots, plunge into a manure heap, and, about the middle of May plant out the seedlings two feet apart, the ground having been deeply dug previously."

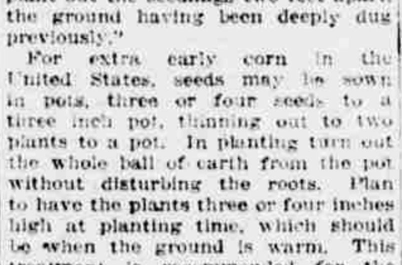
For extra early corn in the United States, seeds may be sown in pots, three or four seeds to a three inch pot, thinning out to two plants to a pot. In planting turn out the whole ball of earth from the pot without disturbing the roots. Plan to have the plants three or four inches high at planting time, which should be when the ground is warm. This treatment is recommended for the small gardens of amateurs who like to try experiments. It is a good idea to try experiments of this kind as it keeps up the interest in the garden.

To have gardens like these make preparations now.

BEANS AND POTATOES.

With potatoes retailing at nearly $3 a bushel and cabbages at 50 cents each and other vegetables in proportion it will pay gardeners possessing hotbeds and greenhouses producing food for table use this year to adopt unusual methods to obtain early crops.

Beans require a steady heat, not lower than 60 degrees, and the atmosphere must never lack moisture or insects may become troublesome. Three seeds may be sown, placed at equal distances, in a six inch pot. Place



1. Potato planted in pot. 2. Potatoes planted in a box. 3. Potatoes in shallow box for sprouting. 4. Potato growing in pot.

a layer of broken pots in the bottom and on these a layer of sod turned upside down. Cover the seeds two inches deep; do not press the soil down too firmly, leaving an inch of space at the top of the pot for a subsequent topdressing of rich soil.

The plants can be set out early under suntrapz or clotches advertised by dealers. These let in the sunlight and entrap the heat which keeps the ground warm over night, keeping out the cold air, and the sun supplies heat again the following day. Liquid manure can be used with much benefit.

Liquid manure is made by running water through manure or using a few handfuls of prepared stable manure or green manure sold by seedsmen in a pail of water, thoroughly stirring it and allowing it to stand a few hours before using.

[illegible] can be allowed to flower and fruit in the soil of a hotbed or in pots in a greenhouse or hotbed, but the soil must not be permitted to become dry once the flowers have appeared.

Early potatoes may be grown in pots or boxes in a greenhouse or in frames where a little heat can be given. Plant only the earliest varieties.

Select good even sized tubers and sprout them by placing the eye ends upward on a layer of earth or sphagnum moss in a shallow box exposed to the light in modest heat. Rub off all except the strongest sprout. When the sprouts are an inch long they are ready for pots or boxes.

The pots or boxes should be well drained with stones or broken pots placed on the bottoms; fill them two-thirds full of good, rich soil mixed with thoroughly well rotted manure, a little sand and commercial fertilizer. Unless well rotted manure is to be had omit it altogether, as fresh manure will not answer.

The pots should be from eight to twelve inches in diameter, placing one tuber in each. Keep them in the light in a temperature of about 50 degrees, give a little tepid water when growth appears, and when the plants are six inches high the pots may be filled up with the compost.

The plants now must have sufficient water and liquid manure twice a week until the plants begin to die, indicated by their turning yellow. Fresh air should be given as often as possible, especially when the plants begin to die.

Several plants may be grown together in boxes or they can be grown in hotbeds with soil at least nine inches deep, planting in rows a foot apart with nine inches between the tubers. Wait until the hotbed temperature has fallen to 75 degrees, giving extra protection on frosty nights.

FERTILIZERS FOR CORN AND OATS.

When used on corn and oats crops nitrate of soda has seldom been profitable in field tests conducted for twenty-three years by the Ohio Experiment Station at Wooster. Acid phosphate has proved the cheapest fertilizer.

Although nitrate of soda has been profitable as a spring fertilizer for wheat when used at the rate of forty to eighty pounds to the acre in connection with acid phosphate, it has seldom returned its cost when used on corn and oats. Acid phosphate alone, used at the rate of eighty pounds each on corn and oats and 160 pounds on wheat in a five year rotation, has increased the yield of corn eight bushels, oats nine bushels, wheat eight bushels and hay 831 pounds for every 100 pounds of the fertilizer. At usual market prices these increases from 100 pounds of acid phosphate would be worth more than $6.

PLANTING ROSES.

The soil for roses should be dug fully two feet deep. If the soil is heavy incorporate with it stable manure; if it is light use cow manure if possible. The manure should be thoroughly mixed with the soil and the ground should be allowed to settle a day or two before planting.

Roses should not be planted in wet soil. If the plants arrive during a rainy period dig a shallow trench in a sheltered locality, lay the roots in this, cover them over with earth and leave them until the ground dries up.

Dwarf roses should be planted from eighteen to twenty-four inches apart and standards thirty inches apart. It is a good plan to place the roots in a pail of water for a few hours before planting.

Make the holes of ample width so the roots can spread out properly in their natural position. Have the centre of the hole higher than the sides, which allows the roots to assume their former position and tends to drain the water away properly.

The union of stock and the scion should be planted two inches below the ground level, and if stakes are to be used these should be placed in position before the roots are covered. Cut away all dead and bruised roots. The soil placed in immediate contact with the roots should be light, sandy and fairly rich where this combination is possible.

When the roots are well covered gently tread the soil, firming it about the roots. Fill up the hole until it is slightly above the level of the ground.

LONG STEMMED HYACINTHS.

Hyacinths in pots or boxes that have been kept in a cool dark cellar to form roots should not be brought into the light until the tops have made considerable growth. From the cool portion of the cellar move them to a warm place near the heater and keep them in the dark. A temporary roofing of strawboard or wooden box covers can be placed over them at sufficient height to permit watering daily. The higher temperature near the heater and the growing plants will dry out the soil, which must be kept damp, probably requiring daily watering. The plants will grow up tall in an effort to reach light. Three weeks or more may be required in this location, depending on the temperature, the soil in the pots and the varieties. This will insure stems of good length for the flowers, whereas if placed in the light as soon as they are removed from the cool cellar, the flowers will open close to the soil in the pot and be dwarf in appearance.

Where there is no other place to keep the pots of bulbs when they are brought up from the cool cellar it may be necessary to put them immediately in the window garden. In this case a good plan is to place a strawboard mailing tube over each plant, which will shut off the light, causing the foliage to push up rapidly in the tube toward the light. When the foliage is of sufficient length the tubes can be removed. Either plan will produce the desired length of flowering stem.

CLEMATIS OVATA.

In THE SUN of July 6 last a correspondent asked if any one knew the beautiful dwarf hardy clematis that grew in her mother's garden in Ohio, many years ago. The pendulus blossoms were pale bluish violet, lined with white and were very fragrant. It was supposed to be clamatis ovata, erect mountain clematis.

I think perhaps the clematis wanted is clematis davidiana, a very beautiful shrub with blossoms like single hyacinths, of a pale porcelain blue, having a delightful perfume. It will be found in almost any plant catalogue. It can be planted either in the spring or autumn. Dreer of Philadelphia has four shrubby varieties.—Mrs. E. O. COCKAYNE, Massachusetts.

Where there is "exhausted soil" usually it is the loss of humus that causes the condition. Get sufficient vegetable matter back into the soil, and usually applying manure is the quickest way to accomplish this. Give a dressing of lime to neutralize it in case the soil is sour and the fertility will be restored. Proper cultivation and handling thereafter, working in vegetable matter every year, will keep it in condition.

Intelligence in insects is exemplified by the fact that the pear psylla does not trouble the Kieffer pear as much as it does other varieties. Insects at least know good pears.

A florists' trade paper is responsible for the statement that the days of the Killarney rose appear to be numbered. Although it is the most prolific of all roses in the hands of certain growers there are many who can do little with it. Buyers have come to prefer almost any other plain rose.

Milking by machinery is less expensive in herds of fifteen cows or more. In smaller herds it is more expensive than hand milking.